PARADYNE™

ACCULINK 3151 CSU and 3161 DSU/CSU
General Information Guide

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December 1998

Introduction

This guide contains general information about the ACCULINK 3151 Channel Service Unit (CSU) and the 3161 Data Service Unit (DSU)/Channel Service Unit (CSU). It is designed to be used in conjunction with the *COMSPHERE 3000 Series Carrier Installation Manual* and the *ACCULINK 315x Channel Service Unit Operator's Guide* or the *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide.*

The Model 3151 CSU and the Model 3161 DSU/CSU are designed to fit into the COMSPHERE 3000 Series Carrier.

Product Documentation on the World Wide Web

We provide complete product documentation online. This lets you search the documentation for specific topics and print only what you need, reducing the waste of surplus printing. It also helps us maintain competitive prices for our products.

Complete documentation for this product is available at **www.paradyne.com**. Select *Service & Support* → *Technical Manuals* → *T1/E1 Digital Access Devices.*

Select the following documents:

Document No. 3000-A2-GA31
COMSPHERE 3000 Series Carrier Installation Manual

Document No. 3150-A2-GB21
ACCULINK 315x Channel Service Unit Operator's Guide

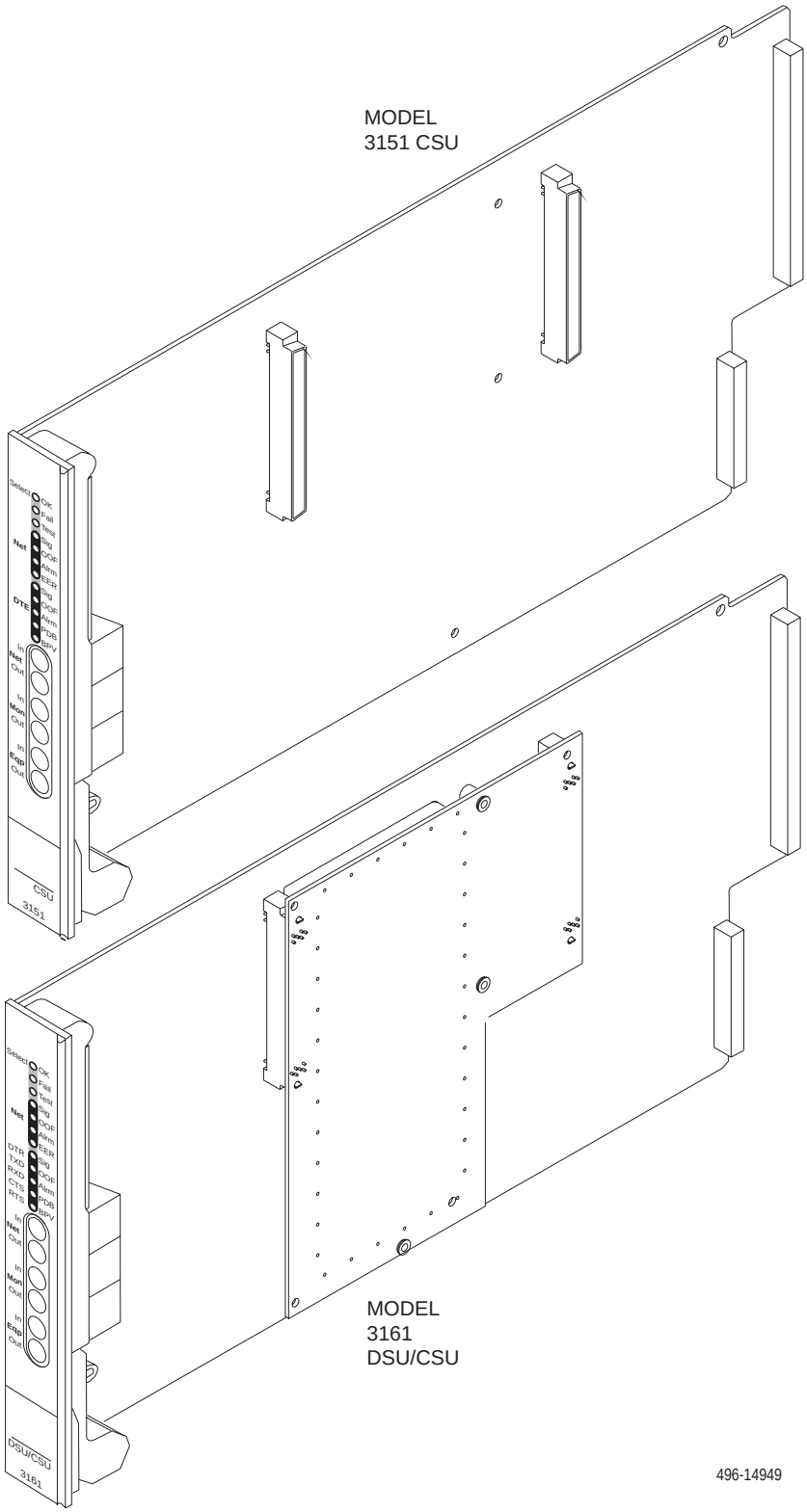
Document No. 3160-A2-GB21
ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide

To request a paper copy of a Paradyne document:

- Within the U.S.A., call 1-800-PARADYNE (1-800-727-2396)
- Outside the U.S.A., call 1-727-530-8623

CSU or DSU/CSU Circuit Card

The front panel of the CSU or DSU/CSU contains twelve light-emitting diodes (LEDs) and six test jacks.



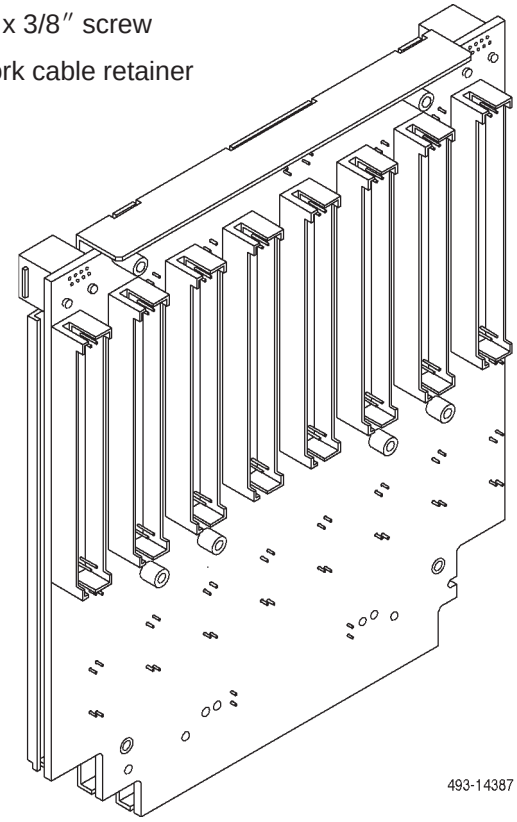
For information about the CSU or DSU/CSU front panel LEDs, refer to Chapter 3 in the *ACCULINK 315x Channel Service Unit Operator's Guide* or the *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide.*

For information about the CSU or DSU/CSU front panel test jacks, refer to Chapter 4 in the *ACCULINK 315x Channel Service Unit Operator's Guide* or the *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide.*

Auxiliary Backplane

Verify that the Auxiliary Backplane package includes the following parts:

- One Auxiliary Backplane
- Two custom hexagonal standoffs
- Two No. 6 nylon insulating washers
- Two No. 5 nuts
- Four No. 4-40 x 1″ screws
- Two No. 4-40 x 3/4″ screws
- One No. 4-40 x 3/8″ screw
- One T1 network cable retainer



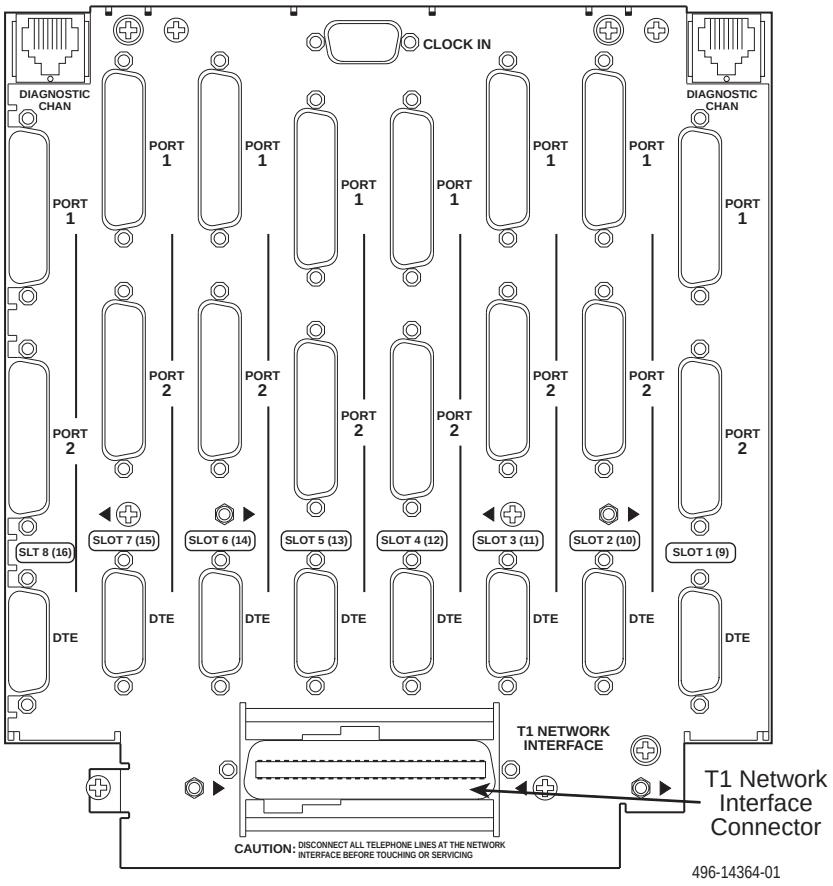
The Auxiliary Backplane is an 8-slot backplane that fits over half the open section of the 3000 Series Carrier. It is a passive assembly that provides interconnect capability for the CSUs or DSU/CSUs.

For more information about the Auxiliary Backplane and the 3000 Series Carrier, refer to the *COMSPHERE 3000 Series Carrier Installation Manual*.

Interface Connections

The Auxiliary Backplane provides the connectors for interface cables.

- For information about Auxiliary Backplane connectors, refer to the *COMSPHERE 3000 Series Carrier Installation Manual*.
- The ACCULINK Model 3151 CSU and Model 3161 DSU/CSU are shipped without cables.
- For information about cables, refer to the *COMSPHERE 3000 Series Carrier Installation Manual*.



Installing the Circuit Card in a Carrier

Read and follow all warning notices and instructions marked on the device or included in this guide. See the *Important Safety Instructions* beginning on page 12.

⚠ HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES

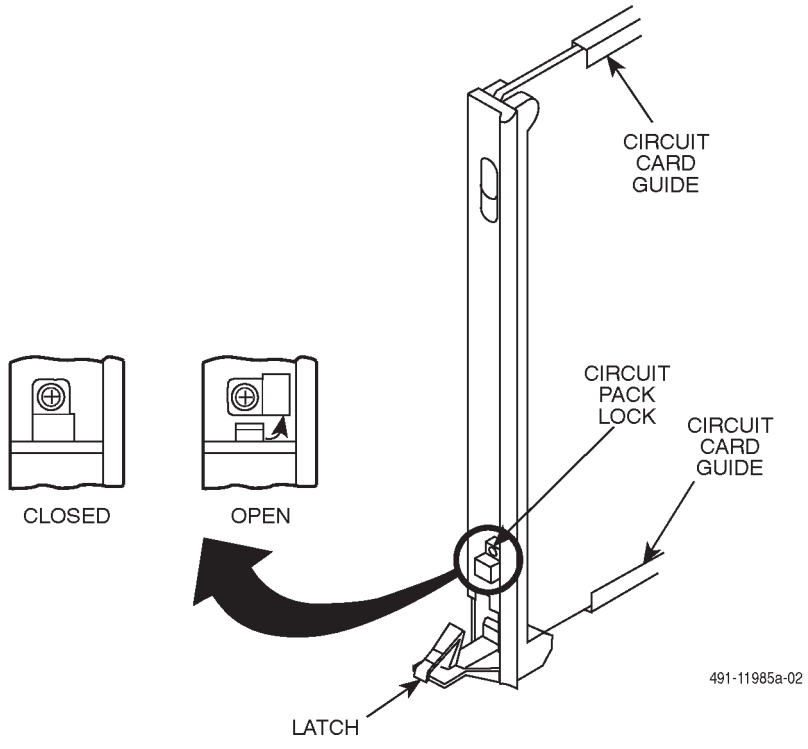
This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

To install a CSU or DSU/CSU circuit card in the 3000 Series Carrier, you must first install an Auxiliary Backplane. For information about installing the Auxiliary Backplane, refer to the *COMSPHERE 3000 Series Carrier Installation Manual*.

▶ Procedure

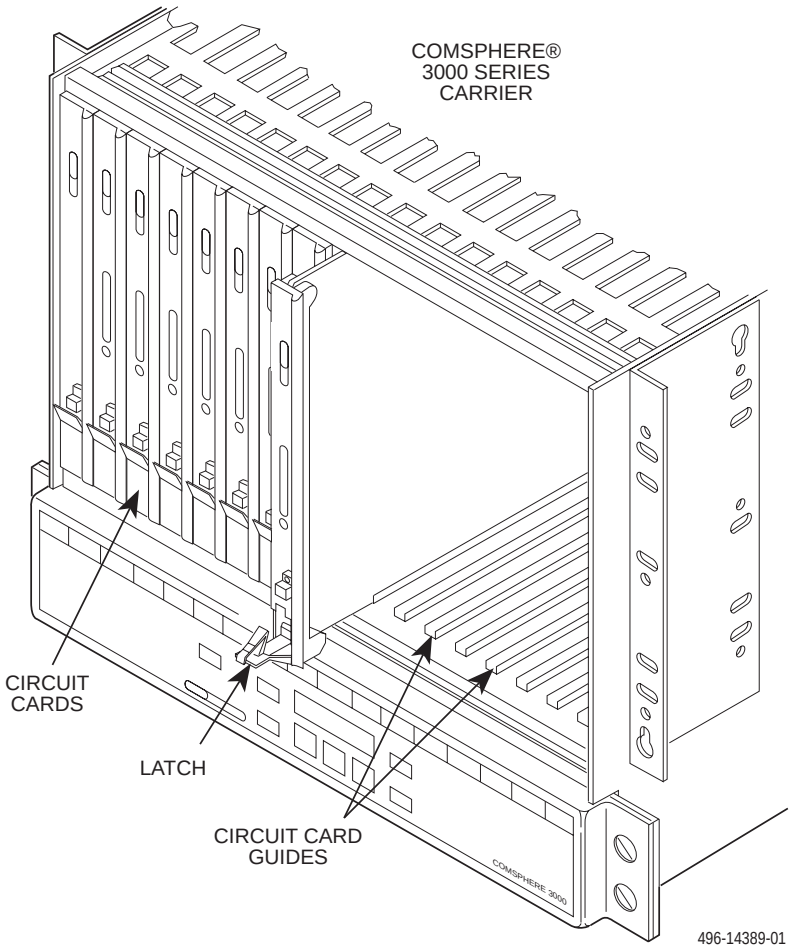
To install the circuit card:

1. Use a Phillips screwdriver to loosen the screw holding the circuit pack lock and rotate the lock to the open position. Open the latch.



2. Hold the circuit card vertically at the front of the carrier, with the faceplate latch in the open position.

3. Insert the card into the top and bottom card guides of one of the slots numbered 1–16.
4. Slide the card into the slot. The ejector latch lifts up as it engages the metal flange.
5. Press the latch up until it clicks into the locked position to secure the circuit card in the carrier.
6. Rotate the circuit pack lock back into the closed position and tighten the screw.



Power-Up Self-Test

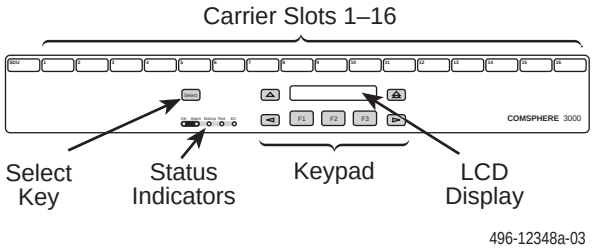
After you install the CSU or DSU/CSU in the carrier and connect the carrier to a power outlet, the CSU or DSU/CSU performs a power-up self-test to ensure that the unit is in good working order. For information about the power-up self-test, refer to the *ACCULINK 315x Channel Service Unit Operator's Guide* or *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide.*

To display the pass/fail status of the power-up test, use the procedure described in *Selecting a CSU or DSU/CSU* later in this chapter, and use the Self-Test Health command described in the *ACCULINK 315x Channel Service Unit Operator's Guide* or *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide*.

If the LEDs on the circuit card do not light during the self-test, there may be a failure in the circuit card or in the carrier's power supply. Install the circuit card in another working carrier. If it works, or if a second circuit card in another slot in the same carrier also does not light, check that the power cable is properly attached and that the outlet is active. Refer to the *COMSPHERE 3000 Series Carrier Installation Manual*.

Shared Diagnostic Control Panel

Use the LCD and keypad on the carrier's Shared Diagnostic Control Panel (SDCP) to select and access individual CSUs or DSU/CSUs within a carrier.



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The SDCP includes one LCD, five LEDs, and eight function keys.

The LCD shows messages and menu tree choices. Messages include alarms, command/test completion, and action in progress.

The OK, Alrm, and Test LEDs reflect the state of the selected CSU or DSU/CSU. The Bckup and EC LEDs are not used for the 3100 Series products.

The 7-button keypad surrounding the LCD enables you to navigate through the menu tree and select choices presented on the second line of the LCD. The eighth key (Select) selects a unit, by slot address, to access through the SDCP. When you select a particular CSU or DSU/CSU, the OK LED on that unit's front panel flashes on and off repetitively.

For more information about the SDCP, refer to the *COMSPHERE 3000 Series Carrier Installation Manual.*

Selecting a CSU or DSU/CSU

▶ Procedure

To select a specific circuit card installed in the 3000 Series Carrier, perform the following steps:

1. Press **Select** on the SDCP.
2. Enter a valid carrier and slot address. The green **OK** indicator on the selected circuit card should flash. (It should be the only **OK** indicator flashing in the cabinet.)
3. Press **Select** again. The display on the SDCP should show the last menu item displayed, or in the case of a new installation, the top-level menu on the selected circuit card.

Using the Communication Port on the Carrier

For specific information about enabling the COM port for carrier-mounted devices, refer to Chapter 3 in the *ACCULINK 315x Channel Service Unit Operator's Guide* or *ACCULINK 316x Data Service Unit/Channel Service Unit Operator's Guide.*

NOTE:

If a Model 3161 DSU/CSU has the COM port enabled, Port 2 cannot be used as a data port.

Technical Specifications

The technical specifications for the Auxiliary Backplane are listed in Table 1. The technical specifications for the 3151 CSU are listed in Table 2. The technical specifications for the 3161 DSU/CSU are listed in Table 3. The fan module cooling requirements for the 3000 Series Carrier are provided in the *COMSPHERE 3000 Series Carrier Installation Manual*.

Table 1. Auxiliary Backplane Technical Specifications

Specifications	Criteria
PHYSICAL DIMENSIONS Height Width Depth	 9.0 inches (22.9 cm) 8.0 inches (20.3 cm) 1.3 inches (3.3 cm)
WEIGHT	2.4 pounds (1.1 kg)

Table 2. ACCULINK Model 3151 CSU Technical Specifications

Specifications	Criteria
POWER REQUIREMENTS Sixteen 3151 CSUs with SDU, SDCP, and fan module: 115 Vac power supply –48 Vdc power supply	 90 to 132 Vac, 60 Hz ±3 (1.25 amp, 111 watts at 115 Vac) –60 to –40 Vdc (2.3 amps maximum)
POWER CONSUMPTION	3.7 watts per circuit card
DTE INTERFACE Physical Interface Framing Format Coding Format DTE Line Equalization Send AIS	 DB15S D4, ESF AMI, B8ZS 5 selectable ranges from 0 to 655 feet (0 to 196.5 meters) Selectable
NETWORK INTERFACE Physical Interface USA Canada Framing Format Coding Format Line Build-Out (LBO) ANSI PRM Bit Stuffing Keep Alive to Network Yellow Alarm Transcoding	 RJ48H (T1), RJ48C with adapter cable CA81A (T1 with adapter cable) D4, ESF AMI, B8ZS 0.0 dB, –7.5 dB, –15 dB, –22.5 dB Selectable FCC Part 68, AT&T TR 62411 AIS, Framed All Ones, Network Signal Looped Selectable
LOOPBACKS Standard Additional	 AT&T TR 54016, AT&T TR 62411, ANSI T1.403.1989 LLB (Line Loopback), PLB (Payload Loopback), RLB (Repeater Loopback)
APPROVALS	Refer to the product labeling
PHYSICAL DIMENSIONS Height Width Depth	 7.1 inches (18.0 cm) 1.0 inches (2.5 cm) 14.2 inches (36.1 cm)
WEIGHT	1.3 pounds (.6 kg)
ENVIRONMENT Operating Temperature Storage Temperature Relative Humidity Shock and Vibration	 32° to 122°F (0° to 50°C) –4° to 158°F (–20° to 70°C) 5%—95% (noncondensing) Withstands normal shipping and handling

Table 3. ACCULINK Model 3161 DSU/CSU Technical Specifications

Specifications	Criteria
POWER REQUIREMENTS Sixteen 3161 DSU/CSUs with SDU, SDCP, and fan module: 115 Vac power supply –48 Vdc power supply	 90 to 132 Vac, 60 Hz ±3 (2.4 amp, 215 watts at 115 Vac) –60 to –40 Vdc (4.7 amps maximum)
POWER CONSUMPTION	9.3 watts per circuit card
DTE (DSX-1) INTERFACE Physical Interface Framing Format Coding Format DTE Line Equalization Send AIS	 DB15S D4, ESF AMI, B8ZS 5 selectable ranges from 0 to 655 feet (0 to 196.5 meters) Selectable
NETWORK T1 INTERFACE Physical Interface (USA) Physical Interface (Canada) Framing Format Coding Format Line Build-Out (LBO) ANSI PRM Bit Stuffing Yellow Alarm Generation	 RJ48H, RJ48C with adapter cable CA81A (T1 with adapter cable) D4, ESF AMI, B8ZS 0.0 dB, –7.5 dB, –15 dB, –22.5 dB Selectable FCC Part 68, AT&T TR 62411 Selectable
LOOPBACKS Standard Additional	 AT&T TR 54016, AT&T TR 62411, ANSI T1.403.1989 RLB (Repeater Loopback), DLB (DTE Loopback), V.54 Loop 2 and Loop 3, ANSI T1.403 Annex B Fractional T1 Loopback
PORT INTERFACE Standards Rates	 EIA-530A, V.35, RS-449, V.11 Nx64 – 64-1.536 Mb Nx56 – 56-1.344 Mb
CLOCKING SOURCES	T1 network interface, Port 1, internal clock, DTE Drop/Insert (DSX-1) interface, or external clock
APPROVALS	Refer to the product labeling
PHYSICAL DIMENSIONS Height Width Depth	 7.1 inches (18.0 cm) 1.0 inches (2.5 cm) 14.2 inches (36.1 cm)
WEIGHT	1.8 pounds (.82 kg)
ENVIRONMENT Operating Temperature Storage Temperature Relative Humidity Shock and Vibration	 32°F to 122°F (0°C to 50°C) –4°F to 158°F (–20°C to 70°C) 5%—95% (noncondensing) Withstands normal shipping and handling

Equipment List

Equipment	Feature Number
Model 3151 CSU	3151-B3-010
Model 3161 DSU/CSU	3161-B3-010
Auxiliary Backplane	3100-F1-900
T1 Network Interface Adapter, 50-pin socket to eight 8-pin modular plugs (RJ48H – RJ48C)	3100-F1-930
Diagnostic Channel Extension, D8W 8-pin modular plug to 8-pin modular plug	3100-F1-910
COM port adapter, DB25 plug to 8-pin modular jack	3100-F1-920
COM port to terminal adapter cable, DB25 plug to 8-pin modular plug	3100-F1-540
COM port to PC adapter cable, DB9 socket to 8-pin modular plug	3100-F1-550
EIA-530-A-to-RS-449/422 Cable	3100-F1-580
EIA-530-A-to-V.35 Cable	3100-F1-570
EIA-530-A-to-X.21 Cable	3100-F1-571
T1 Network Interface Adapter, 50-pin socket to eight 8-pin modular sockets (RJ45) (Harmonica Block Adapter)	3100-F1-940
Crossover cable, 8-pin modular plug to DB15 plug	3100-F1-590
T1 Network Interface Adapter, 50-pin socket to eight DB15 plug (Canada)	3100-F1-950

NOTE:

Cable descriptions for the 3151 CSU and the 3161 DSU/CSU are located in the *COMSPHERE 3000 Series Carrier Installation Manual*.

Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. When an ac power source is used, this product is intended to be used with a 3-wire grounding type plug – a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adapter.
3. Prior to installation, use an outlet tester or a voltmeter to check the ac receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem.
4. If a 3-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.
5. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
6. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
7. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
8. General purpose cables may be provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
9. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
10. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
11. This product contains a coin cell lithium battery that is only to be replaced at the factory. **Caution:** There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same type. Dispose of used batteries according to the battery manufacturer's instructions. **Attention:** Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

12. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:

    — Never install telephone wiring during a lightning storm.

    — Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

    — Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

    — Use caution when installing or modifying telephone lines.

    — Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

    — Do not use the telephone to report a gas leak in the vicinity of the leak.

Notices

⚠ WARNING:

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

THE AUTHORITY TO OPERATE THIS EQUIPMENT IS CONDITIONED BY THE REQUIREMENTS THAT NO MODIFICATIONS WILL BE MADE TO THE EQUIPMENT UNLESS THE CHANGES OR MODIFICATIONS ARE EXPRESSLY APPROVED BY PARADYNE.

⚠ WARNING:

TO USERS OF DIGITAL APPARATUS IN CANADA:

THIS CLASS A DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

CET APPAREIL NUMÉRIQUE DE LA CLASSE A RESPECTE TOUTES LES EXIGENCES DU RÉGLEMENT SUR LE MATÉRIEL BROUILLEUR DU CANADA.

Government Requirements and Equipment Return

Certain governments require that instructions pertaining to CSU and DSU/CSU connection to the telephone network be included in the installation and operation manual. Specific instructions are listed in the following sections.

Notice to Users of the United States Telephone Network

1. This equipment complies with Part 68 of the FCC rules. On the equipment is a label that contains, among other information, the FCC registration number for this equipment. The label is located on the CSU or DSU/CSU circuit card assembly. If requested, this information must be provided to the telephone company.

2. There is one type of telephone line associated with this equipment. The T1 network connection should be made using a Universal Service Order Code (USOC) type RJ48H jack. The Service Order Code 6.0F should be specified to the telephone company when ordering the T1 line. In addition, the proper Facility Interface Code must be specified to the telephone company. The CSU or DSU/CSU can be configured to support any of the following framing format and line signaling techniques. The CSU or DSU/CSU configuration must correspond to the T1 line's parameters.

CSU and DSU/CSU Facility Interface Codes

Code	Description
04DU9-BN	1.544 Mbps superframe format (SF) without line power
04DU9-DN	1.544 Mbps SF and B8ZS without line power
04DU9-1KN	1.544 Mbps ANSI ESF without line power
04DU-1SN	1.544 Mbps ANSI ESF and B8ZS without line power

3. If the CSU or DSU/CSU causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

4. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

5. If you experience trouble with this equipment, please contact your sales or service representative (as appropriate) for repair or warranty information. If the product needs to be returned to the company service center for repair, contact them directly as described in *Warranty, Sales, and Service Information* on page 15.

Notice to Users of the Canadian Telephone Network

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connection of the power utility, telephone line, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

If your equipment is in need of repair, refer to *Warranty, Sales, and Service Information* below.

Warranty, Sales, and Service Information

Contact your local sales representative, service representative, or distributor directly for any help needed. For additional information concerning warranty, sales, service, repair, installation, documentation, training, distributor locations, or Paradyne worldwide office locations, use one of the following methods:

- **Via the Internet:** Visit the Paradyne World Wide Web site at http://www.paradyne.com
- **Via Telephone:** Call our automated call system to receive current information via fax or to speak with a company representative.
  - — Inside the U.S.A., call 1-800-870-2221
  - — Outside the U.S.A., call 1-727-530-2340

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